

REMARKS

Drawings Objections:

The Examiner objected to the drawings under CFR 1.83(a) for failure to show elements described in the specification. The Applicant has accordingly revised the drawings, appended to this paper as Replacement Sheets Figures 1, 2 and 3. The Applicant submits that this objection is accordingly overcome.

The Examiner also objected to the drawings for failing to adequately label components with proper identifiers, and for failing to show the electrical connections between certain components. As stated above, the Applicant has accordingly revised the drawings, appended to this paper as Replacement Sheets Figures 1, 2 and 3, and the Applicant submits that this objection is also accordingly overcome.

Claims Objections:

The Examiner objected to Claim 5 under 37 CFR 1.75(c) as being in improper form because of multiple dependent Claim 4. Claim 5 has been amended herein to not depend from Claim 4, thereby overcoming the objection.

Claims Rejections:

The Examiner rejected Claim 1 to 16 under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement.

With regard to Claims 1 and 5, the Examiner states that the specification:

fails to disclose the connection of the "sensor circuit detection means" (263) with the switches in which to control the switches as well as the input and output of the power switches (235). It is unclear how current flows through the device. An input and output of the switch as well as a source and load connection are not

disclosed.

It is therefore unclear how the plug and socket isolation means (202 & 216) operate to permit electrical current flow.

With regard to Claim 2, the Examiner states that it was unclear how the socket isolation means is performed. With regard to Claims 3, 6 to 9, 12 and 14, the Examiner states that it was unclear how the circuit isolation means is performed.

While the amended drawings when combined with the description as filed serve to sufficiently clarify these matters, the Applicant also wishes to provide the following remarks.

At paragraph 61 of the present application, it is stated that:

the invention provides for interposing specific isolation circuits 202 and/or 216 to isolate and protect such components during the engagement process. We accomplish this by connecting plug 212 via a wire harness 210 to switching circuit 202.

It is to be understood that, by generally accepted schematic conventions, the wire harnesses depicted in the amended drawings are intended to show a routing of several "bundled" conductors, the specific ordering of such conductors not being immediately pertinent to the present invention (see, for example, diagrammatic instances of various harness depictions in *Modern Communication Systems*, Second Edition, R F Coates, pub: The Macmillan Press Ltd.). To clarify this issue, in accordance with generally accepted schematic conventions, Figure 1 has been amended to clearly show lines 210 and 224 as harnesses, thereby addressing the Examiner's concerns.

In addition, the amended drawings, specifically amended Figures 2 and 3, now clearly illustrate how current flows through the device, and the only addition is to clarify what would be obvious to one skilled in the pertinent art. It is clear that the current sensor 242 in Figure 2 controls the power switch 244 via a control line, and equally clear in Figure 3, that the current sensor 241 controls the power switch 243 via a control line. It

is now abundantly clear how the isolation means operate.

As is made clear in the disclosure, until either one or both sensor circuits 256, 257 are activated by the appropriate connection to their respective sensor lines (250/282 and 250/294, respectively), neither will activate their respective timing circuits (258 and 257, respectively). Amended Figures 2 and 3 depict the operation of closing the various power switches and digital switches as being controlled not only by the current sensor circuits (to alleviate an over-current situation) but also by the timer circuits, thereby illuminating the means by which no potentially harmful plug/socket connection can be made until the engagement process is complete. The timing means ensures that it is unlikely that a temporary or faulty engagement circumstance is able to cause an inappropriate switch contact closure. If neither sensor circuit is activated by their correct and electrically-live sensor lines, no power switch nor digital switch will close; if either sensor circuit is activated by its correct and electrically-live sensor lines, the power switch and digital switch will close after a preset time period; if both sensor circuits are activated by their correct and electrically-live sensor lines, the power switches and digital switches will close after a preset time period.

It will be readily apparent to one skilled in the art, based on the disclosure in the present application, that if only one sensor circuit is electrically active prior to engagement, once engagement is complete its power switch will beneficially activate the hitherto inactive circuit on the "other" side; this is because the present application makes use of a detail in the operation of power field effect transistors (FETs) utilized in the embodiments as power switches: between the source and drain there is an "intrinsic" diode that enables current to flow in the normally reverse current direction regardless of the state of the controlling means of the FET – its gate. Thus, when one FET is controllably passing current to the other FET, the latter is able to accept the current, thereby activating the switching circuits, etc., with which it is associated, so bringing both plug and socket circuits into full operation. It will be noted that even if power FETs were not used (means such as a mechanical relay, for example), incorporating a diode to implement this feature is straightforward and obvious.

The Applicant accordingly submits that the drawings, as amended to reflect both the description in the present application and the knowledge of the person skilled in the art, fully and adequately enable the claims as amended.

Indefiniteness:

The Examiner also rejected Claims 1, 2 and 3 as indefinite, as the phrase "such as" was presented in a manner that made it unclear whether limitations following the phrase were part of the claimed invention. The Applicant has accordingly amended Claims 1, 2 and 3 to delete the phrase and address this ground of rejection. Please note that new Claim 18 has been added to incorporate the element of the "simple electronic device" being a diode.

Antecedent Basis:

The Examiner also rejected Claims 1, 2 and 3 for reciting "the socket diode" and "the diode" when there was insufficient antecedent basis for such phrases. The Applicant has accordingly amended Claims 1, 2 and 3 to address this ground of rejection.

New Claims:

As stated above, two new claims have been added, Claims 17 and 18.

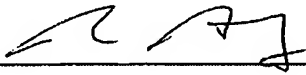
New Claim 17 has been added in response to the objection to original Claim 5, which was objected to as depending from a multiple dependent Claim 4. The objectionable subject matter of original Claim 5 has been removed from Claim 5 as amended and presented in proper form in new Claim 17.

New Claim 18 has been added to address the removal of the "diode" language from Claims 1, 2 and 3, which as amended refer only to a "simple electronic device". New

Claim 18 adds the element that the simple electronic device is a diode.

In view of the above amendments and remarks, it is believed that this application is now in condition for allowance, and a Notice thereof is respectfully requested.

Respectfully submitted,



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Date: May 2, 2006

RMH:rmh

Amendments to the Drawings:

The attached sheets of drawings include changes to Figures 1, 2, and 3 and have been labelled "Replacement Sheet", accordingly.

The changes to Figures 1, 2, and 3 are noted in the Remarks section of this response.